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REMARKS

Claims 1-11 remain pending. Claim 1 has been non-substantively amended solely to improve its form and readability. Claim 1 has not been narrowed by this amendment. Nor was the amendment motivated at all by the pending rejection of claim 1.

In the Office Action, the Examiner rejected claims 1, 6, 7, and 11 under 35 U.S.C. § 103(a) as being unpatentable over Wang et al. (U.S. Patent No. 6,523,233) in view of Lemson (U.S. Patent No. 5,678,198); and stated that claims 2-5 and 8-10 would be allowable if rewritten in independent form.

As an initial matter, and contrary to the allegation on page 5 of the Office Action, the explanations and distinctions in the previous Amendment are not “moot” in view of the new ground of rejection. Much of the allegations about Wang et al. in the previous Office Action are repeated *verbatim* in the Office Action dated August 2, 2004. As far as Applicants can tell, the section about claim 1 that extends from page 2, 6th line of section 1, to page 3, line 11, of the pending Office Action differs from the previous Office Action by only “and (b) intermodulation distortion” on page 3, line 5. Although technically a new ground of rejection, the addition of Lemson adds just three substantive lines on page 3, lines 12-14, of the Office Action. In other words, the rejection of claim 1 presented in the pending Office Action is just barely different from the previous rejection.

Thus, the explanations and distinctions presented in the last Amendment are certainly not “moot” with regard to the *identical* portion of the pending rejection of claim 1. The Examiner may not properly shirk the duty to answer all material traversed under M.P.E.P. § 707.07(f)

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merely by adding a second reference and repeating most of the rejection. Accordingly, Applicants respectfully request that, to the extent they are not repeated below, the Examiner also answer the substance of the traversals in the prior Amendment in any future Office Actions.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See M.P.E.P. § 2143.

Applicants respectfully traverse the § 103(a) rejection of claims 1, 6, 7, and 11 over Wang et al. in view of Lemson. Claim 1 requires a method including, *inter alia*, "preprocessing to minimize effects of impairments other than IMD, to derive best estimates x' of the received values that would correspond to a set of transmit values y ; deriving an IMD based constant I from x' ; and deriv[ing] an IMD removed new estimate x'' in accordance with an equation: $x'' = x' - I(by^3)$." The combination of Wang et al. and Lemson fails to teach or suggest the claimed method.

Failure to teach or suggest "deriving an IMD based constant"

Page 2 of the Office Action alleges that the "deriving an IMD based constant I from x' " element of claim 1 reads on col. 3, lines 49-51 of Wang et al. This portion of Wang et al. only appears to disclose calculating a digital impairment based on a digital test signal (col. 3, line 31). Col. 3, lines 49-51, of Wang et al. does not teach or suggest "deriving [an] IMD based constant

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I'' as set forth in claim 1. Nowhere in Wang et al. is inter-modulation distortion (IMD) even mentioned. Thus, Wang et al. cannot logically teach or suggest deriving an "IMD based constant" as claimed.

Nor does Lemson teach or suggest deriving such an IMD based constant. Rather, col. 4, lines 30-35 of Lemson discusses another patent, No. 5,321,849, in which potential for intermodulation distortion is minimized. Col. 2, line 62, through col. 3, line 3, of Lemson indicates that such IMD minimization may be accomplished by a control signal with a low amplitude. Having a low level control signal, however, in no way teaches or suggests "deriving an IMD based constant I from x'," as set forth in claim 1. Thus, Lemson also fails to teach or suggest "deriving IMD based constant I from x'" as required by claim 1. Therefore, the combination of Wang et al. and Lemson does not teach or suggest this required claim element.

Failure to teach or suggest "deriv[ing] an IMD removed new estimate x" . . ."

Page 2 of the Office Action also alleges that the "deriv[ing] a IMD removed new estimate x'' in accordance with the equation: $x'' = x' - I (by^3)$ " element of claim 1 reads on col. 5, lines 50-55 and 60-61 of Wang et al. This portion of Wang et al. only appears to disclose a set of conditions that produce a common analog impairment G. It cannot reasonably be argued that the equation $z=G*y=G*f(x)$ in col. 5, lines 50-55 and 60-61, of Wang et al. (or the equations in col. 6) teach or suggest the specifically claimed equation " $x'' = x' - I (by^3)$ " set forth in claim 1. For example, Wang et al. does not teach or suggest cubing any particular variable. Hence, Wang et al. fails to teach or suggest the third-quoted "deriv[ing] a IMD removed new estimate x'' in accordance with the equation: $x'' = x' - I (by^3)$ " element of claim 1 above.

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The Office Action does not allege that Lemson teaches or suggests the claimed equation: $x'' = x' - I (by^3)$. Thus, the combination of Wang et al. and Lemson does not teach or suggest this required claim element and equation.

Failure to teach or suggest "preprocessing to minimize effects of impairments other than IMD"

Page 2 of the Office Action alleges that the "preprocessing . . ." element of claim 1 reads on col. 3, lines 39-46 of Wang et al. This portion of Wang et al. only appears to disclose computing an analog impairment based on a digital test signal. Col. 3, lines 39-46, of Wang et al. does not teach or suggest preprocessing anything to minimize the effects of an impairment; it only teaches *calculating* a type of impairment.

Further, the term "preprocessing" implies the existence of similar, later processing. The cited portion of Wang et al. simply does not teach or suggest "preprocessing" before such later processing as required by claim 1. Hence, Wang et al. fails to teach or suggest the first-quoted "preprocessing . . ." element of claim 1 above.

The Office Action does not allege that Lemson teaches or suggests the claimed "preprocessing" claim element. Thus, the combination of Wang et al. and Lemson does not teach or suggest this required claim element either.

Because, as explained above, the cited portions of Wang et al. fail to teach or suggest any of the three elements of claim 1, a *prima facie* case of obviousness has not been established for independent claim 1.

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In any event, no suggestion or motivation to modify or combine teachings

A *prima facie* case of obviousness also has not been established, because there is no suggestion to modify Wang et al. as proposed or to combine its teachings with those of Lemson.

First, Also, the justification that “modifying constants and/or variables of a known function to achieve an optimum relationship requires routine skill in the art” is legally incorrect and factually inapplicable. None of the various rationales in M.P.E.P. §§ 2144-2144.09 supports this sweeping assertion. If the Examiner cannot produce case law or other material from the M.P.E.P. to support this allegation, it must be withdrawn as a matter of law.

Also, the claimed equation: $x'' = x' - I (by^3)$ is characterized as “a known function” and “an optimum relationship of the variables” on page 3 of the Office Action. This is factually incorrect. Wang et al. discloses a number of equations, for example $z = G * y = G * f(x)$, that are completely different in both structure/form and variables from the specific one that is claimed. This is not, as the Examiner seems to suggest, a case of changing a value (e.g., 1.2 to 2) within the same equation. Rather, it is an improper attempt to fabricate a different equation from whole cloth. This amounts to an assertion that any equation is obvious over any other equation, different form and variables notwithstanding, which is logically and legally incorrect.

One skilled in the art, in possession of Wang et al., would not have been motivated to change any of the equations in the reference to achieve the elements of claim 1. If the Examiner disagrees, she is respectfully requested to provide detailed technical reasoning of how and why one of ordinary skill in the art would have modified any equation in Wang et al. to arrive at the claimed equation: $x'' = x' - I (by^3)$.

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Second, one of ordinary skill in the art would not have been motivated to add the teachings of Lemson. Contrary to page 3 of the Office Action, Lemson does not disclose "use" of intermodulation distortion. Rather, it appears to disclose minimization of such by having a low control signal strength (col. 2, line 62, through col. 3, line 3). Also, the proposed justification of modifying Wang et al. "with intermodulation distortion for the purpose of minimizing the instantaneous signal amplitude excursion" is nonsensical, because col. 4, lines 32-34, of Lemson teaches that signal amplitude excursions cause intermodulation distortion, and not the other way around. In sum, the mere mention of intermodulation distortion (IMD) in Lemson does not provide motivation to add the several IMD-related claim elements that are missing from Wang et al.

A *prima facie* case of obviousness has not been established for independent claim 1 for these additional reasons.

Claims 6, 7, and 11 are allowable at least by virtue of their dependence from claim 1.

Reconsideration and allowance of pending claims 1-11 is respectfully requested.

In the event that any outstanding matters remain in this application, Applicants request that the Examiner contact Alan Pedersen-Giles, attorney for Applicants, at the number below to discuss such matters.


To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-0221 and please credit any excess

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fees to such deposit account.

Respectfully submitted,

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